

# CHAPTER 4

## SUBSTANCE ABUSE

---

Introduction	4-1
The Alcohols	4-1
Alcohol in the Body	4-2
Management of Patients with Alcohol-Induced Disorders	4-3
Alcohol Intoxication	4-3
Alcohol Withdrawal	4-5
Alcohol Dependence and Alcohol Abuse	4-7
Prevention	4-8
Drugs of Abuse	4-8
Introduction	4-8
Opioid-Related Drugs	4-9
Sedative-, Hypnotic- and Anxiolytic-Related Drugs	4-10
Amphetamine-Related Drugs	4-11
Hallucinogens	4-12
Cannabis	4-13
Cocaine	4-14
Inhalants	4-14
Summary	4-15



# Substance Abuse

---

## INTRODUCTION

Substance abuse is the use of drugs (including prescription medications) or alcohol in ways that interfere with one's life at work, school, and home. Substance abuse can lead to serious illness, dependency, and death. Death may be due to acute and chronic affects. Drugs of abuse may be swallowed, inhaled, snorted, injected, or even absorbed through the skin and mucous membranes. Alcohol is the most widely abused drug today. Alcohol use has been a factor in many drownings, tragic ship collisions and other mishaps at sea. It is the responsibility of the entire crew to promote and practice responsible attitudes toward alcohol use. Those in command of the vessel are ultimately responsible for reinforcing responsible alcohol use and not tolerating illegal drug use. Intoxication from alcohol or drugs can endanger the entire crew. It is important to recognize the signs and symptoms of substance use disorders and to seek appropriate treatment.

## THE ALCOHOLS

**THE ALCOHOL FAMILY** is made up of many chemical compounds. Ethyl alcohol, the best known member of the group, is a product of fermentation and is the intoxicating substance in beer, wine, and other liquors. Other alcohols commonly used are methyl alcohol, isopropyl alcohol and denatured alcohol.

**Methyl alcohol**, also known as wood alcohol or methanol, is a fuel and has industrial usage as a solvent. Wood alcohol is a poison that must never be consumed (including inhaled) because it causes liver toxicity, blindness, and death.

**Isopropyl alcohol** is "rubbing alcohol" and often used as a disinfectant. It is poisonous if taken internally.

**Denatured alcohol** is ethyl alcohol with other chemicals (denaturants) added to make it unfit for drinking. It has many industrial uses. If it is aboard ship, use extreme care to make certain that it is clearly labeled as a poison, and that any crew members with access to it fully understand that it is not safe to drink. Deaths occur each year in people drinking denatured alcohol who are unaware of its dangers.

**Ethyl alcohol** (also know as grain alcohol or ethanol) is given special attention in this chapter because it is the active intoxicant of alcoholic beverages. It is a colorless, flammable liquid that supplies calories, but has no nutritional value. It has been used

as an antiseptic, drying agent, sedative, anesthetic, and hypnotic agent. It is a pain-reliever that reduces pain by sedating the brain and central nervous system. Ethyl alcohol is considered a drug because of the profound depressant effects it has on the central nervous system. Like barbiturates and narcotics, it causes addiction and dependence.

## DEFINITIONS

Note: Complete definitions and diagnostic criteria can be found in the current edition of the *Diagnostic and Statistical Manual* published by the American Psychiatric Association. Following are general descriptions.

**Alcohol Intoxication** is the presence of significant maladaptive behavioral or psychological changes (i.e. impaired judgment, impaired social functioning, and inappropriate behavior) that develop during or shortly after the ingestion of alcohol. These changes are normally accompanied by slurred speech, unsteady gait, and impairment in attention or memory. In high doses, stupor, coma and death can result. Intoxication impairs driving abilities and performance of duty, and can lead to marine and other accidents. While intoxicated, one is not fit for duty and should never operate tools or equipment.

**Alcohol Abuse** refers to the isolated or continued habit of drinking in ways that cause difficulties at work, school or home. It results in physically hazardous situations and leads to legal problems. A sign of alcohol abuse is that drinking continues in spite of the resulting problems.

**Alcohol Dependence** includes physical and psychological dependence, and is a pattern of use that continues in spite of various warning signs. Physical dependence occurs when the body requires alcohol to prevent withdrawal symptoms. Tolerance, or the need for more alcohol to produce the same effects, also develops. Psychological dependence involves psychological craving for the drug. A dependent person is distressed by alcohol's effects on his/her life and efforts to reduce consumption are often unsuccessful. Significant time is spent obtaining alcohol and its use interferes with other activities. The person often uses alcohol in larger amounts or over a longer period of time than intended.

## ALCOHOL IN THE BODY

Unlike other foods that require slow digestion, alcohol is absorbed directly into the bloodstream through the walls of the stomach and the small intestine. The blood carries it to all body tissues, including the brain, where it has an immediate depressant effect. The liver slowly metabolizes the alcohol. Lesser amounts are excreted through the lungs, skin, and kidneys. If alcohol is consumed faster than the body can dispose of it, the blood concentration increases. Alcohol is a central nervous system depressant and also an anesthetic.

Initially, alcohol seems to produce feelings of stimulation. Alcohol "numbing" of the judgment center of the brain, which controls inhibitions and restraints, makes one feel

buoyant and exhilarated. Continued drinking on a given occasion increases the concentration of alcohol in the bloodstream. This causes depression of various areas of the brain that affect judgment, emotions, behavior, and physical well-being. Reflex time is markedly reduced. Operating marine vessels under the influence of any amount of alcohol is unsafe.

Alcohol ingestion causes absorption and nutritional deficiencies. The combination of malnutrition and tissue injury may contribute to brain damage, heart disease, diabetes, ulcers, cirrhosis of the liver, and muscle weakness. The Wernicke-Korsakoff syndrome, with irreversible and potentially fatal brain and nervous system damage, is due to severe acute and chronic thiamine deficiency. Treatment of serious alcohol disorders should include injected and oral thiamine, as well as other vitamins and nutrients.

Alcohol can also act as a direct poison to body tissues. Liver damage, including irreversible cirrhosis, can result from chronic drinking. The brain and other tissues can also be irreversibly damaged.

Sudden death may occur: (1) when the individual has ingested so much alcohol that the brain center which controls breathing and heart action is fatally depressed; (2) when other depressant drugs (such as “sleeping pills”) are taken along with alcohol, magnifying the depressant effects; (3) during an accident (one-half of all fatal traffic accidents involve the use of alcohol); or (4) as a result of suicide or murder (many self-inflicted deaths as well as homicides involve the use of alcohol.)

## MANAGEMENT OF PATIENTS WITH ALCOHOL-INDUCED DISORDERS

The *Diagnostic and Statistical Manual – IV* by the American Psychiatric Association identifies a range of alcohol-induced disorders including dependence, abuse, intoxication, withdrawal, intoxication delirium, and withdrawal delirium. Alcohol can also induce dementia, amnesic, psychotic, mood, anxiety and sleep disorders as well as sexual dysfunctions.

Alcohol intoxication, alcohol withdrawal, and alcohol dependence and abuse are discussed below.

### ALCOHOL INTOXICATION

At lower blood alcohol levels, mild intoxication is self-limiting as long as the person stops drinking. However, reflexes are impaired, and activities such as driving and working with machinery are dangerous. As little as one drink impairs one’s abilities.

As alcohol levels increase with more drinking, there is poor control of muscles, poor coordination, double vision, flushing of the face, bloodshot eyes, and vomiting. Behavior varies greatly. It is hard to predict what an intoxicated person will do next.

He/she may cry bitterly, show unexplained happiness, change moods rapidly, or just pass out. NOTE: "Passing out" or "falling asleep" can be a warning sign that the person is actually in a dangerous alcohol coma. Shipmates may assume the person is safely asleep, when he/she may actually be in a life-threatening coma. Take care to monitor a shipmate's condition and make certain he is breathing and responsive. Get immediate help if you suspect alcoholic coma. This could save a life.

Alcohol is metabolized by the body at a constant rate regardless of activity. Black coffee or a cold shower may make an intoxicated person feel better but the reaction times are not changed – they remain slowed. It is impossible to "walk off" excess liquor or intoxication. Performance remains impaired. Alcohol is metabolized at about one drink per hour. (One drink is a 12-ounce beer, 4-ounce glass of wine, or 1 ounce of hard liquor.)

Serious intoxication results when a large amount of an alcoholic beverage is taken over a relatively short period of time (or for a longer period of time, when alcohol intake exceeds alcohol excretion). Memory is commonly lost for the events while intoxicated. Symptoms are drowsiness that can progress rapidly to coma; slow snoring breathing; blueness of the face, lips, and fingernail beds; involuntary passage of urine or feces; dilated pupils; and rapid weak pulse. .

**A suspected alcoholic stupor or coma represents a medical emergency. Obtain immediate help via radio.** Also, be aware that the signs and symptoms of drunken stupor are similar to other medical emergencies such as intoxication from prescription or illegal drugs, other poisonings, stroke, brain injury, insulin shock and diabetic coma. For example, a person may have an odor of alcohol on the breath and also be in a diabetic coma.

Stupor or coma always requires immediate treatment, no matter what the cause, though the specific treatment varies, dependent upon the cause. Remember that accidents, falls and fights are commonly associated with drunkenness, so the head should be checked for signs of injury, the pupils of the eyes for equality of size and moderate dilation (in serious head injury and stroke the pupils may be unequal and non-reactive to light) and the patient's temperature recorded. The individual's shipmates should be questioned on whether the patient might have taken drugs, been injured, or overexposed to fumes or poisons. Also try to determine how much alcohol the person may have consumed and over what time period. Personal effects should be checked for medications and other drugs if indicated. Accurately diagnosing the cause(s) of the stupor is key to successful treatment.

## **Treatment**

Immediate first aid for someone in a stupor or coma is the ABC's – airway, breathing, and circulation. **Obtain immediate consultation by radio.** The patient's airway should be kept clear by placing him on his side. The unconscious patient should be

placed on his side and not be allowed to sleep on his back, because a deepening of stupor or coma may cause choking on the tongue or vomitus. The patient should be continually observed and not left alone. Frequently monitor and record vital signs. A continual written record of the patient's condition, vital signs, and treatment provided should be maintained.

The specific treatment is dependent upon the cause(s) of the stupor or coma. For example, in addition to alcohol, the patient may have taken prescription or illegal drugs. The patient may have suffered a head injury or stroke. Other medical problems such as diabetes could be compounding the situation. Treatment must address all the interacting factors.

Alcohol disorders are usually chronic problems that are not resolved simply because the immediate crisis is over. Upon return to home port, the crew member should receive a formal drug/alcohol assessment screening by a qualified professional. Treatment often involves referral to a specialized alcohol treatment program.

## **ALCOHOL WITHDRAWAL**

Alcohol withdrawal occurs when a physiologically dependent person abruptly stops using alcohol. Physiologic dependence can develop after prolonged and heavy drinking. For example, consider a crew member who drinks alcohol regularly while in home port. When this crew member goes to sea and suddenly stops drinking, he/she may experience withdrawal within a day or two. Thus, withdrawal is most common early in a voyage. **Alcohol withdrawal can be a life-threatening emergency.**

The *Diagnostic and Statistical Manual – IV* identifies symptoms characteristic of withdrawal. These include increased sweating and pulse (greater than 100/min), hand tremor, insomnia, nausea or vomiting, hallucinations or illusions, agitation, anxiety, and grand mal seizures. The patient is distressed by the symptoms. Alcohol withdrawal is diagnosed when the symptoms are due to the cessation of alcohol and not due to another medical or psychiatric disorder.

Alcohol withdrawal can advance to withdrawal delirium, called delirium tremens or "DTs". DT's include a disturbance of consciousness and a change in cognition. DT's usually occur within 24 to 72 hours of stopping alcohol intake; however they may occur as much as a week after. **DT's are a life-threatening emergency requiring complex medical treatment. To prevent serious DT's, any alcohol withdrawal symptoms require early treatment and immediate medical consultation by radio.**

A delirious patient should never be left unattended. Even when the symptoms appear mild, constant observation is required. An accurate written record should be kept of the patient's condition, including vital signs and urinary output. Treatment should be symptomatic. The patient's recent history should be reviewed carefully to

determine the cause of the delirium. In addition to alcohol withdrawal, there may be a co-occurring head injury or another medical problem. Medical advice by radio should be obtained and followed.

## **Treatment**

Alcohol withdrawal symptoms, as they increase, often signal impending DT's. Recognition of these symptoms as warnings, followed by prompt treatment, often will prevent deterioration and full-blown delirium tremens. **Alcohol withdrawal can be a life-threatening emergency. Early recognition and treatment are essential. Obtain medical consultation by radio.**

In treating impending (and actual DT's), medium-to-long acting benzodiazepines are used to "substitute" for the body's dependence on alcohol. When withdrawal symptoms are first observed, prompt treatment should begin with a drug such as oral chlordiazepoxide. This should control the minor symptoms and, if properly managed under medical direction, should prevent the severe withdrawal symptoms of delirium tremens, including seizures. When the patient is stable, the benzodiazepine dosage should be tapered over several days, while the patient's vital signs and condition are closely monitored. Tapering, rather than sudden stopping, is important to prevent further complications such as benzodiazepine-withdrawal seizures.

Efforts should be made to allay the patient's fears with reassurance and a careful explanation of procedures. Nightmares, illusions, and hallucinations often are reduced if the patient is placed in a well-lit room, and in the presence of others rather than in isolation and restraints. The patient's pulse, blood pressure, and temperature should be taken every four hours (or more often if the patient does not seem stable) and charted in a written medical record. Pay attention to any changes – they can be warning signs that the patient's condition is worsening.

If the patient has not stabilized after 24 hours of treatment with a benzodiazepine, one should assume that there are other medical complications and problems that require immediate medical intervention. **Continued radio consultation is critical for appropriate management.**

Seizures, historically called "rum fits", are another symptom of alcohol withdrawal. One of the primary objectives in treating an alcohol convulsion (seizure) is to prevent patient injury and injury to others. The patient should be placed on his/her side (to prevent aspiration), tight clothing loosened, and air passages kept open. General seizure precautions and management should be used. To interrupt a convulsion, diazepam (1-3 mg intravenously **under medical supervision**) may be adequate. Intravenous diazepam should be given carefully and slowly. If injected too quickly or given in too large a dose, it can cause respiratory arrest and death. If intravenous administration is not possible, diazepam can be administered intramuscularly. Continue treatment as for impending DTs. Further, seizures are often a signal of

other serious disease, and thus deserve a prompt and full medical work-up to rule out other causes such as brain tumors.

**Medical management of a patient in DT's is complex. Get medical consultation via radio.** Untreated, DT's have a 20% fatality rate; treated it is about 5%. Recognition and early treatment of alcohol withdrawal symptoms is key to prevention. However, should DT's occur, they require extensive medical care. When possible, hospitalization is advised.

Further, a patient in DT's is often agitated, confused and/or paranoid. One should talk with the patient in a calm voice and explain in simple terms what is going on. Effort should be made repeatedly to reassure. The patient should never be left alone, even for a moment. Precautions to prevent suicide should be observed. The room should be kept evenly lighted at all times because delirium usually is worse in the dark or in twilight. The source of light should be placed to avoid casting strange shadows.

Rarely, restraints may be needed to prevent the patient from hurting himself or others. These should be applied only with the permission of the ship's captain. Restraints should be applied carefully, and only if safe procedures are known and followed. Mechanical restraints can be dangerous, tend to antagonize or irritate the patient, and should be used only when absolutely necessary. Restraining appliances should not be placed within reach of the patient's fingers or teeth, or where they might cause pressure or discomfort. These devices must not interfere with the patient's breathing. Constant supervision of restrained patients must be maintained. The patient in restraints should be watched carefully to avoid injury. A complete written record explaining why restraints were needed, how they were applied, and the patient's condition at regular intervals (about 15 minutes) is essential. The chart should be signed by each crew member providing one-on-one observation during their time "on watch". **Restraints should only be used if no other intervention will prevent danger to the patient or others; a patient in restraints requires close and continual one-on-one monitoring.**

## **ALCOHOL DEPENDENCE AND ALCOHOL ABUSE**

Alcohol dependence and alcohol abuse are disorders that are sometimes called "alcoholism". Alcohol dependence may include tolerance, withdrawal, and the inability to reduce use, even when it interferes with other parts of one's life. Alcohol abuse occurs when alcohol use interferes with work, school and home-life, and may also include alcohol-related legal problems.

Problem drinkers have varying degrees and patterns of alcohol use. Some alcohol abusers go on periodic sprees or binges, but between these they drink little or no alcohol. Others may drink regularly day after day for long periods. Alcohol causes various problems both aboard ship and when ashore on liberty. Alcohol is a common contributor to fights and arguments.

Chronic alcohol abuse causes many medical problems, and is especially damaging to the liver, brain and nervous system.

### **Treatment**

Alcohol dependence and abuse are difficult to manage and treat aboard ship. Chapters of Alcoholics Anonymous are found world-wide. For someone who has the determination to quit drinking, attending meetings in the various ports-of-call can be helpful. However, management of the crew member who does not want to change problem drinking behaviors is challenging. Referral for formal evaluation and treatment in the homeport are appropriate. Most importantly, alcohol use must be prevented from interfering with the safe operation and management of the ship.

### **PREVENTION**

Prevention of alcohol incidents requires senior leadership and education of the entire crew. It also requires effective management of any problems as they occur. The ship's culture should expect (and demand) responsible alcohol behavior.

## **DRUGS OF ABUSE**

### **INTRODUCTION**

A range of chemicals can be abused – illicit drugs, prescription drugs, and shipboard chemicals, especially those with an organic solvent base. They can be consumed as a solid or liquid; sniffed, snorted, or smoked; injected; inserted rectally; or applied to the skin. Symptoms of intoxication and withdrawal vary with different chemicals. When drug dependence occurs, both tolerance (more drug is needed for the same effect) and withdrawal symptoms can be present.

To identify drug abuse, look for changes in behavior. The behavior changes are dependent upon the drug taken. A person on hallucinogens may see and here things that aren't there. Other drugs are stimulants or depressants. Some behavioral changes may actually first appear to be positive. For example, with amphetamine use, a usually bored sleepy person may be more alert and even improve his/her performance. Conversely, a nervous, high-strung individual on barbiturates may be more cooperative and easier to manage.

Signs that suggest drug abuse include sudden and dramatic changes in discipline and job performance. Drug abusers may display unusual activity or inactivity, and sudden and irrational flare-ups involving strong emotion or temper. There may be an increase in arguments. Personal appearance may decline - often a drug abuser becomes indifferent to his appearance.

There are other, more specific signs that should arouse suspicions. Among them are furtive behavior about actions and possessions (fear or discovery), sunglasses worn

at inappropriate times and places (to hide dilated or constricted pupils), and long-sleeve garments worn constantly, even on hot days, to hide needle marks.

Seven main classes of drugs of abuse are discussed: opioid-related drugs, sedative-hypnotic and anxiolytic-related drugs, amphetamine-related drugs (stimulants), hallucinogens, cannabis, cocaine, and inhalants.

## **OPIOID-RELATED DRUGS**

Opioid-related drugs, commonly called narcotics, are available by prescription (such as morphine and oxycodone for pain) and are also illegal street drugs (such as heroin and opium). They are known for their “rush” and then a feeling of tranquility. This is followed by a feeling of dysphoria. They cause nausea, vomiting and constipation. An overdose is characterized by coma, depressed respiration and pinpoint pupils. Narcotic use quickly results in physical dependence with classic withdrawal or abstinence symptoms of muscle aches, yawning, increased perspiration, running nose, watery eyes, “goosebumps”, diarrhea, dilated pupils, and increased pulse and temperature.

To achieve maximum effect, narcotics are injected directly into a vein (“main-lining”). Once physically addicted, to prevent the abstinence syndrome, most addicts inject two to four times per day. The most common site of injection is the inner surface of the arm at the elbow. After repeated injections, scar tissue (tracks) develops along the course of such veins. Because of the easy identification of these marks, narcotic abusers may wear long sleeves at odd times. Females sometimes use makeup to cover marks and some males get tattooed at injection sites. HIV/AIDS and hepatitis B and C are readily transmitted by sharing needles.

The narcotic abuser may be detected by noting the presence of the equipment (“works” or “outfit”) used in injecting narcotics. Because anyone injecting drugs must keep the equipment handy, it may be found on his person, or hidden nearby in a locker, washroom, or any place where temporary privacy may be found.

All narcotics are not injected. Though narcotic pain medications can be injected, they can also be taken orally or as rectal suppositories. Impure opium was historically smoked in “opium dens”. Heroin can be “snorted” in the nose, though this requires more drug for the same effect and thus is more expensive than injecting. Oral preparations which can be abused include codeine in cough medicines and narcotic anti-diarrhea drugs. When narcotics are taken orally the blood level rises slowly so the “rush” is not as great as when injected or snorted.

## **Treatment of Opioid Intoxication and Dependence**

Opioid intoxication can be unexpected and serious – if a bag of heroin contains a higher than expected concentration of active drug, a serious overdose can result. Since the opioids can cause respiratory depression, the ABC’s (airway, breathing,

cardiac) are the first steps in management. Immediate medical advice by radio should be obtained.

With all opioid-related drugs such as opium, heroin, meperidine, morphine, oxycodone, methadone, and hydromorphone, overdose produces similar clinical states. Respiratory depression is the most dangerous and can be fatal. Depressed respiration requires close observation and may require manual or mechanical artificial respiration. Naloxone, a narcotic antagonist, may be indicated when a patient has signs of even mild respiratory depression.

Naloxone is used to treat acute narcotic intoxication or overdose. It is a pure narcotic antagonist. Naloxone binds to the opioid receptors, and thus displaces the opioid. Since naloxone does not cause respiratory depression, dosing can be repeated and it can reverse some opioid-induced respiratory depression. Naloxone has a relatively short duration of action, and must be re-administered frequently. The length of time it is needed depends upon many factors including the duration of action of the narcotic the patient took. Short-acting narcotics such as heroin and morphine are cleared faster (and thus require naloxone for a shorter time) than longer acting drugs, such as methadone.

Opioid-related drugs cause a physical dependence when used regularly and have a classic withdrawal or abstinence syndrome. A short-acting drug has a faster onset and shorter duration of withdrawal than a longer acting drug. Though opioid withdrawal is unpleasant, it is rarely life-threatening (unlike an overdose, which can be fatal.) Supportive care is helpful. Various drugs, such as clonidine, can be prescribed to minimize the withdrawal symptoms. Methadone and buprenorphine hydrochloride can be used for longer-term management of opioid dependence.

In addition to the physical dependence caused by opioid-related drugs, they also cause psychological dependence. This is characterized by craving, which may continue for life, even if the physical signs of withdrawal resolve. "Psychological" dependence and craving may have a biological basis in the receptor cells. They make opioid abuse difficult to treat.

## **SEDATIVE-, HYPNOTIC- AND ANXIOLYTIC- RELATED DRUGS**

The sedative-, hypnotic- and anxiolytic-related drugs include benzodiazepines (e.g. diazepam), carbamates (e.g. gluetethimide, meprobamate), barbiturates and related hypnotics (e.g. methaqualone). Intoxication resembles alcohol with slurred speech, incoordination, unsteady gate, and impairment of memory and concentration. These drugs are central nervous system depressants and an overdose can be fatal due to respiratory suppression. These effects are compounded when taken with alcohol, which makes them especially dangerous.

Benzodiazapines are sometimes used with cocaine and other stimulants to "take the edge off". They are also used to self-medicate withdrawal from other addictive drugs.

## Management of Intoxication

The treatment of intoxication and overdose requires support of cardiovascular and respiratory functions – remember the ABC's. **Overdose is a medical emergency – obtain medical consultation via radio.** Maintenance of the airway is of crucial importance. Oxygen and intravenous fluids may be needed. Stimulant drugs generally are not effective in restoring normal respiration. If the patient is conscious, gastric lavage will be helpful in removing any unabsorbed drug from the stomach. Take care to avoid aspiration and choking.

## Management of Withdrawal

When a patient becomes physically dependent on a drug in this class, abruptly stopping the drug can result in a withdrawal syndrome. It is characterized by increased sweating, pulse, tremor, insomnia, nausea and vomiting, hallucinations, anxiety, and agitation. **Life-threatening seizures can also result. Immediate medical management is essential.** Close supervision is essential. Medical advice by radio should be obtained.

Aboard ship, it is often best to provide the drug, taper the dose and withdraw the drug gradually. Continued abstinence is difficult to obtain. Long-term treatment is best in a shore-based facility where medical support and behavioral counseling are available.

## AMPHETAMINE-RELATED DRUGS

Amphetamines and related substances, such as methylphenidate, are stimulants that are available as both prescription and street drugs. Methamphetamine ("meth" or "speed") has recently become a popular and dangerous drug of abuse. Another drug, methylenedioxymeth-amphetamine (MDMA, "ecstasy," "XTC," or "ADAM"), acts as both a mild hallucinogen and stimulant. It can cause heatstroke with high temperature and low heart rate and blood pressure. If untreated, coma and death can result.

As a group, amphetamine-related drugs are stimulants. Their intoxication is characterized by fast or slow heart rate or cardiac arrhythmias, high or low blood pressure, dilated pupils, perspiration or chills, nausea and vomiting and various movement disorders. Behavior is characterized by excessive activity. The stimulant abuser is irritable, argumentative, appears extremely nervous, and has difficulty sitting still. Other observable effects include incessant talking and chain-smoking. The person abusing stimulant drugs often goes for long periods of time without sleeping or eating, and may disturb others by their hyperactivity. Following the stimulant intoxication, the patient may experience a profound "crash" or hangover with depression.

## Treatment

The treatment of an overdose from an amphetamine-related drug is complex, so medical advice should always be sought by radio. It is important to determine whether the patient has taken any other drugs, such as barbiturates or alcohol. Drug combinations are dangerous and can be very difficult to treat.

Life-threatening toxic doses of stimulants cause tachycardia (fast heart rate) that can lead to a heart attack. They may also cause abnormally high body temperatures above 102°F (39°C). High temperatures should be treated like heatstroke. A fully conscious patient who has ingested an overdose *orally* should be forced to vomit or gastric lavage should be instituted to remove any unabsorbed drug, taking care to avoid aspiration.

Light sedation with diazepam may be required; *but this should be administered only upon medical advice by radio. **DO NOT SEDATE A VOMITING PATIENT.***

## HALLUCINOGENS

Although LSD is the most widely known hallucinogen, others seen frequently include mescaline (the active ingredient of the peyote cactus which originates in Mexico) and psilocybin (the active ingredient from a specific Mexican mushroom.) Two synthetic substances, DMT (dimethyltryptamine) and DOM (dimethoxyamphetamine,) also known as STP (implying Serenity, Tranquility, and Peace) are abused frequently. When taken in sufficient dosage, any of these substances will produce illusions (incorrect perception of objects) and hallucinations (a sensory perception without objective stimulus, such as seeing, hearing, feeling, tasting, or smelling something that does not exist.) Other abnormal experiences with hallucinogens include a feeling of great excitement and insight. In high doses they also cause physical symptoms such as dilated pupils, sweating, increased heart rate, blurred vision, tremors and in-coordination.

Persons using hallucinogens may use them sporadically. Persons under the influence of hallucinogens often sit or recline quietly in a dream or trance-like state. Conversely, users can become fearful and experience a feeling of terror. This can cause them to try to escape from the group or engage in violent action. Hallucinogens can induce suicidal and homicidal tendencies.

Hallucinogenic drugs are usually taken orally as tablets, capsules, or liquids. Users put drops of the liquid into beverages, on sugar cubes, crackers, or a small paper wad or cloth. When buying drugs on the street, it is impossible to know the actual content of the product. Since hallucinogens are relatively cheap, other drugs may be “cut” with them. The customer is unaware the hallucinogen is in the drug, and its effects contribute to a “bad trip”.

It is important to remember that the effects of LSD (lysergic acid diethylamide) and other hallucinogens may recur days or even months after the drug has been taken.

## Treatment

Though hallucinogen use can result in a “bad trip”, most experienced drug users can generally control this unpleasant experience. However, skilled help may be required if the user, often inexperienced, suffers a loss of control and is overwhelmed with anxiety, terrifying sights and sounds, delusions of persecution, extreme depression and/or the belief that he is going out of his mind. The treatment for a bad trip is basically the talk-down technique. This involves non-moralizing comforting support from an experienced individual. Limiting external stimuli, such as having the patient lay down to relax in a quiet darkened area, can be helpful. **These patients should never be left unattended.** Also, monitor vital signs to assure the patient is medically stable.

If radio consultation is sought and diazepam is recommended, be certain of other drugs the patient may have taken to avoid dangerous, even fatal, interactions.

## CANNABIS

Cannabis is also called marijuana or “pot”, and is closely related to hashish. The drug can act as a stimulant; the user may be very animated and appear almost hysterical. Loud and rapid talking with bursts of laughter are common at this state. There may be an increase in appetite. At higher doses, the user may seem to be in a stupor or sleepy. The drug can also cause hallucinations and delusions.

Marijuana smokers may be identified by their possession of cigarettes or other smoking paraphernalia. The cigarettes, called sticks, reefers, or joints, are hand rolled in off-white cigarette papers. Smaller than a regular tobacco cigarette, with the paper twisted or tucked in on both ends, the marijuana cigarette often contains seeds and stems. Marijuana can be smoked in a tiny pipe or a water pipe (called a “bong”).

Another clue to the presence of marijuana is the way it is smoked - the smoke is inhaled deeply and held in the lungs as long as possible. Marijuana smoke has a characteristic odor similar to burnt rope. It is readily noticeable on the breath and clothing. Marijuana may also be eaten, especially when mixed in foods such as brownies. Marijuana is greener in color than regular tobacco.

Marijuana use affects reflexes, distorts sensory perceptions and impairs the user’s abilities. Driving and using tools and equipment are unsafe when under the drug’s influence.

Use and possession of small quantities of marijuana is legal in some countries. Each crew member must understand the ship’s policies regarding its purchase and use during port calls.

## **Treatment**

Acute serious adverse reactions to marijuana alone are rare. Unbeknownst to the user, marijuana is often “cut” with other drugs, such as phencyclidine (PCP) or LSD to increase the “high”. The user is unaware of these other drugs at the time of purchase, and there is no way to determine what the drug combination actually is. This contributes to a “bad trip.” Bad trips can be unpredictable and treatment can be difficult. If the person is physically and medically stable, the same talking-down techniques used for LSD and other stronger hallucinogens can be effective. Physical complications require direct medical interventions.

Some people use marijuana on a daily basis and become dependent on it. The marijuana affects their job performance and family relationships. A formal substance abuse evaluation for treatment may be indicated.

## **COCAINE**

Cocaine is the active ingredient in the coca plant, and is purified in many forms. It can be injected, snorted or smoked. As a fast-acting central nervous system stimulant, it results in a rapid “rush” and binge use is common. The “rush” is followed by a “crash” when the drug’s effects wear off.

“Crack” cocaine, commonly used in the U.S., is formed into small “rocks” that are smoked in small pipes or added to tobacco or marijuana cigarettes. The active ingredients are easily vaporized and inhaled, resulting in a rapid onset of action with an immediate “high”. “Free base” cocaine is made by heating with solvents and then smoked.

Cocaine use can result in a range of symptoms – paranoia, aggressive behavior, violence, anxiety, and depression. The drug quickly causes dependence and tolerance. Many researchers believe the drug changes the brain’s chemistry, and results in drug craving. This makes cocaine abuse very difficult to treat. Death from cocaine use is generally due to cardiac arrhythmias. Criminal activity to acquire funds to purchase the drug is common. Cocaine disrupts the individual user’s life, and also is a major public health problem.

## **Treatment**

Cocaine intoxication and overdose can be serious. Cardiac and other life threatening effects require specific immediate treatment. The underlying abuse and dependence are very difficult to treat.

## **INHALANTS**

Inhalants are potentially dangerous, volatile chemicals that are found in consumer, commercial, and industrial products intended for use in well-ventilated areas. The vapors they produce can be extremely dangerous when inhaled; many cause permanent brain damage. Examples are gasoline, glue, lighter fluids (butane), paint, wet markers, propellants in aerosol spray cans, and nitrous oxide. Some chemicals,

such as the nitrite inhalants (“snappers” and “poppers”), are produced as intoxicating drugs.

Inhalants can be abused by “sniffing” (inhaling through the nose directly over an open container), or “huffing” (pouring or spraying material on a cloth that is held over the mouth and inhaling through the mouth.) These methods usually use a bag or other container to concentrate and retain the propellant thereby producing a quick “high” for the abuser. Inhalants give a particularly rapid “high”, which encourages their use.

Persons who regularly abuse inhalants risk permanent and severe brain damage and even sudden death. The vapors from these volatile chemicals can react with the fatty tissues in the brain and literally dissolve them. Additionally, inhalants can reduce the availability and use of oxygen. Acute and chronic damage may also occur to the heart, kidneys, liver, peripheral nervous system, bone marrow, and other organs. Sudden death can occur from respiratory arrest or irregular heart rhythms that are often difficult to treat even if medical care is quickly available.

The acute signs and symptoms of inhalant abuse resemble a combination of alcohol and marijuana intoxication. The user may have a dreamy or blank expression. Acute symptoms are short-lived and usually resolve within a couple of hours. However, the serious brain damage may be permanent. Physical symptoms of withdrawal from inhalants include hallucinations, nausea, excessive sweating, hand tremors, muscle cramps, headaches, chills and delirium tremens. Thirty to forty days of detoxification is often required, and relapse is frequent.

### **Treatment**

During the acute episode, if physically stable but emotionally distraught, the patient can be treated by “talking-down,” recognizing the possibility of hostile outbursts. As with other substance abuse problems, a drug/alcohol assessment screening by a qualified screener as soon as the ship arrives in homeport may be indicated. The long term dangers of inhalant abuse should be emphasized to the patient.

## **SUMMARY**

The use and abuse of alcohol and other drugs is a significant health and safety issue aboard ship. Substances of abuse have both short- and long- term effects on the health of the individual crew member. Serious medical consequences, including death, can result from unintentional overdoses, especially if more than one drug is taken at a time. Substance abuse also affects overall mission safety. Reflex times, judgment, and sensory perception are impaired with intoxication. An intoxicated crew member can endanger the ship, its mission, and the entire crew. The Captain’s leadership is critical, and the responsible behavior of everyone aboard is essential.